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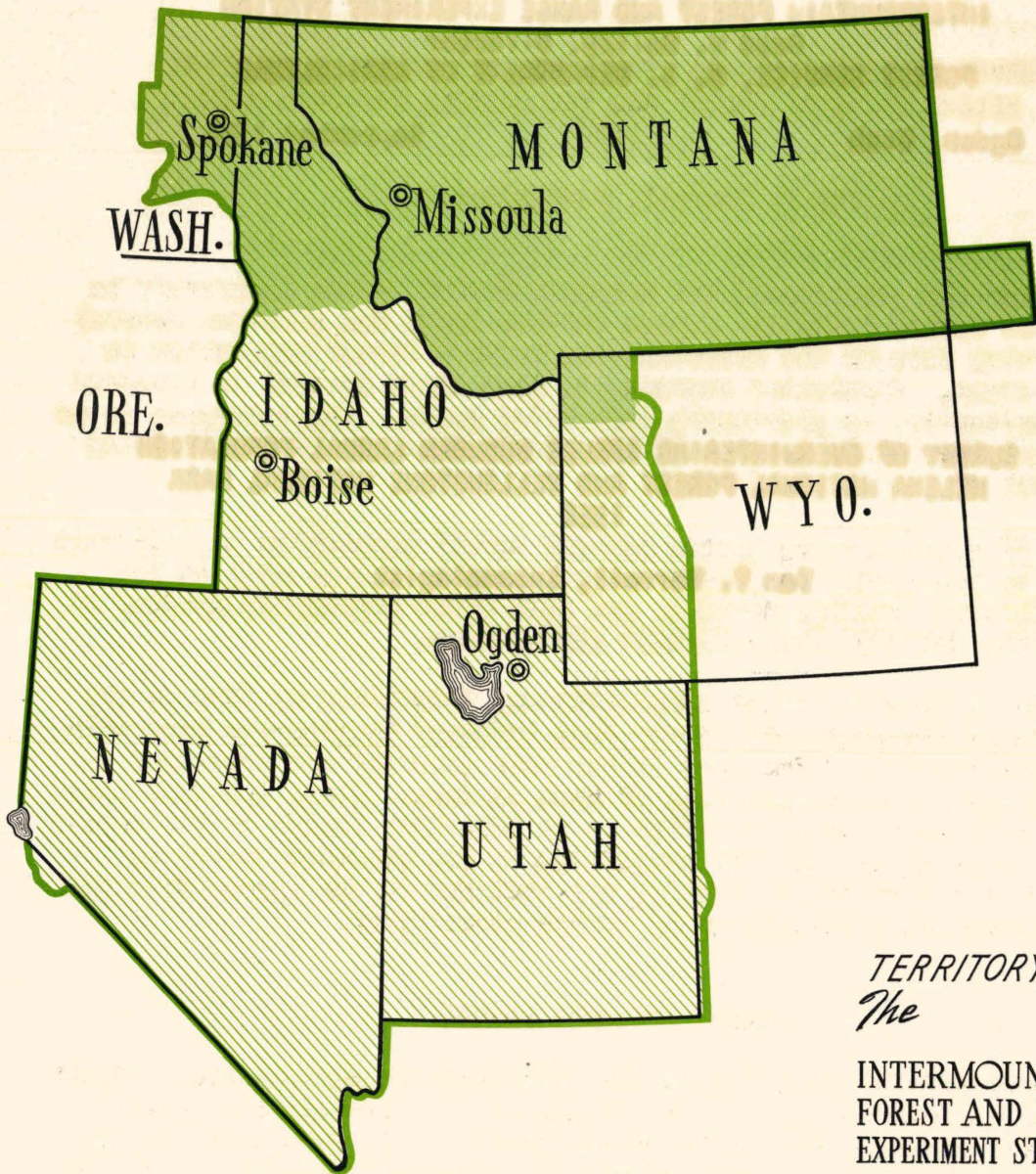
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SURVEY OF OVERWINTERING SPRUCE BUDWORM LARVAL POPULATION
HELENA NATIONAL FOREST AND YELLOWSTONE NATIONAL PARK
1958

Tom T. Terrell, Entomologist

Prepared By The
Missoula Forest Insect Laboratory
Missoula, Montana

The AREA COVERED BY THIS REPORT



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The

INTERMOUNTAIN
FOREST AND RANGE
EXPERIMENT STATION



The MISSOULA FOREST INSECT LABORATORY is a Field unit of the Intermountain Forest and Range Experiment Station at Ogden, Utah. The Laboratory conducts forest insect research, surveys forest insect outbreaks, and gives technical advice on cooperative insect control programs in Montana, northwestern South Dakota, northwestern Wyoming, northern Idaho, and northeastern Washington. The functions are conducted in the remaining station territory by staff entomologists at Ogden, and Boise, Idaho.

SURVEY OF OVERWINTERING SPRUCE BUDWORM LARVAL POPULATION
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It has been the practice of the Missoula Forest Insect Laboratory to supplement spruce budworm^{1/} damage surveys (made the previous season) by obtaining data on the overwintering budworm larval population on certain areas. Population surveys are made where control is proposed and occasionally, in previously controlled areas. Their purpose is to supplement the damage surveys of the previous season by ascertaining the extent of insect population.

Surveys of overwintering spruce budworm larval population in 1958 were limited to two areas: a proposed experimental control unit in the Helena National Forest, Montana, and some units previously sprayed in Yellowstone National Park, Montana and Wyoming.

Abundance of budworm larval population was determined by forcing the emergence of overwintering larvae from infested Douglas-fir tree bole sections during May. Emerging larvae were recorded and presented in terms of larvae per square foot of bark surface. Since internal parasitism by hymenopterous parasites is an important factor in biological control, records of internal parasitism in the emerging larvae by Dr. H. R. Dodge of the Laboratory are included in the survey data and are expressed as a percentage of larvae parasitized.

HELENA NATIONAL FOREST

The spruce budworm control area for 1958 includes approximately 15,000 acres of Douglas-fir type in the Helena Forest, principally in the Deep Creek drainage east of Townsend, Montana. To obtain an estimate of the overwintering budworm population and parasitism, bole sections were collected from five drainages in the proposed control area late in April. The infested material was brought into the Laboratory where the forced rearing and population analysis was made as shown in the following table:

^{1/} Choristoneura fumiferana Clem.

<u>Drainage and Location</u>	<u>Bark sur- face sq.ft.</u>	<u>Budworm larvae</u>	<u>Larvae per sq.ft.</u>	<u>Percentage of parasitism</u>
Cabin Gulch, S.E. $\frac{1}{4}$ Sec.14, T.7N., R.4E.	9.14	379	41.5	63
Cabin Gulch, N.W. $\frac{1}{4}$ Sec.22, T.7N., R.4E.	9.53	230	24.1	61
N.Fk. Deep Creek N.E. $\frac{1}{4}$ Sec.8, T.7N., R.4E.	8.77	1,030	117.4	56
N.Fk. Deep Creek W.side Sec.8, T.7N., R.4E.	8.55	1,625	190.1	61
W.Fk. Cabin Gulch S.E. $\frac{1}{4}$ Sec.16, T.7N., R.4E.	<u>9.06</u>	<u>1,023</u>	<u>112.9</u>	<u>61</u>
Totals	45.05	4,287		
Average			95.2	60

The budworm population in the proposed control area is very heavy. Past experience indicates such a population is sufficient to consume virtually all the 1958 foliage. Parasitism, however, as recorded, is unusually high.

YELLOWSTONE NATIONAL PARK

Yellowstone National Park personnel collected a series of Douglas-fir bole sections from areas formerly sprayed for budworm control. Three of the areas were sprayed twice: in 1955 and 1957. Two areas were sprayed only in 1957.

The following table gives the results of forced rearing of budworm larvae and recorded parasitism from the Yellowstone bole sections:

<u>Drainage and location</u>	<u>Bark sur- face sq.ft.</u>	<u>Budworm larvae</u>	<u>Larvae per sq.ft.</u>	<u>Percentage of parasitism</u>
1955 and 1957 Control				
Southeast of Crescent Hill	9.02	0	0	-
Slough Creek	9.72	576	59.3	16
Mammoth Hot Springs	7.64	0	0	-
1957 Control Only				
East of Druid Peak	8.76	269	30.7	21
Ice Box Canyon	<u>9.14</u>	<u>1209</u>	<u>132.3</u>	<u>31</u>
Totals	44.28	2054		
Average			46.4	23

Results of the budworm population survey in Yellowstone Park show spotty results from control operations. Rather heavy, irregular defoliation can probably be expected during 1958. Parasitism recorded is considerably lower than normally found in infestations of several years' duration.